

A Second Memoir with reference to the Theory of the Law of Storms in India; being, Researches relating to the Storm of the 19th to the 21st September at the head of the Bay of Bengal; to the Great Hurricane at Coringa on the 16th November, 1839; and to another off the Island of Preparis on the 22d November. By HENRY PIDDINGTON.

PART I.

My first Memoir on this subject, published in the Journal of the Asiatic Society for July and August 1839, was occupied with the Gale and Hurricane of 3rd to 5th June of 1839, with some theoretical and practical deductions. In the present, I propose to consider the tempests which occurred in the Bay of Bengal, between that epoch and the close of the same year. The first of these is the Gale of 19th to 21st September 1839.

The authorities from which my information respecting it is derived, are the logs and reports of about fourteen ships, Pilot, and Light Vessels, and 10 or 12 reports from inland stations, which have reached me through the Secretary to Government, pursuant to the notice published in the newspapers on 11th September, 1839.

I proceed, as in the first Memoir, to place upon record the materials, abridging them when necessary; after which I shall arrange them in a tabular form for each day, so as to afford thereby at a glance, as well as by the chart, a synoptical view of the progress of the storm.

*No. 1.—Extract from the Log of the H.C. Steamer “Enterprise,”
Capt. C. H. West; in the Bay of Bengal.*

Tuesday, 17th Sept. 1839. P.M. Freshening breeze and clear Wind. weather. At sunset fresh WSWesterly breeze SW. to WNW. and cloudy weather. At 10 P.M. succession of heavy squalls from SW. to WNW. with vivid lightning. At 4 A.M. strong breeze with heavy squalls; throughout the forenoon constant heavy squalls; all sails furled, and the engines working from 8 to 10 revolutions. Sun obscured. Latitude per log, $13^{\circ} 22'$ N., longitude per log, $84^{\circ} 50'$.

Wednesday, 18th Sept. 1839. P.M. Fresh gale from the SW.

Wind. with a high sea, and the vessel labouring very much. At 4 P.M. set the fore topsail, double reefed ; and the mizen close reefed ; sighted a brig scudding under her foresail, steering to the NE. At sun-set, fresh gale and squally. At midnight, increasing gale and WNW. to SW. cloudy weather, with a rising sea ; vessel labouring much. Carried away the wheel ropes ; rove new ones. At daylight split the fore try-sail ; lowered it to repair. At 7 A.M. set ditto again, but close reefed. At 8 A.M. heavy gale, with very high sea. At 10½ A.M. pitched the jibboom in, and carried it away ; and on the vessel sending to the same sea aft, stove the jolly boat over the stern, filled her with water and nearly carried her away altogether ; got her in over the stern. At noon heavy gales and thick cloudy weather, with a high sea. Sun obscured. Latitude per log 13° 14' N., Longitude per log, 84° 46' E. The engines during this twenty-four hours at 5 to 9 revolutions.

Thursday, 19th Sept. 1839. P.M. Unbent fore trysail and bent the new one. At 4 P.M. strong gales with heavy squalls and rain. At 6 P.M. ditto weather, and high sea ; drift about 1½ to SW. At 9 P.M. during a heavy squall, the roping of the new fore trysail gave way ; lowered it for repair. At midnight more moderate, and to all appearance the gale breaking. At 1h. 30m. A.M. the moon set, when the gale raged as fierce as ever in heavy squalls. At daylight heavy gales, with a high topping sea. Vessel labouring heavily. Close reefed the main sail in case the mizen should give way ; drift about one mile to the NW. At 9 A.M. gale increased, with high topping sea. Noon heavy gale with hard squalls and rain. Got the sun between the squalls.

WbN.

West.

SWb.

SSW.

Latitude by observation $13^{\circ} 18' N.$, longitude per log, $85^{\circ} 10' E.$ Engines working at 6 to 10 revolutions this twenty-four hours.

Friday, 20th Sept. 1839. p.m. Heavy gale with very high sea ; got a preventer tackle on the fore mast ; during the last 16 hours kept vessel close to the wind, with only the mizen set, and the engines working from 6 to 9 revolutions. At 8 p.m. more moderate. At midnight decreasing gale and clear. *A.m.* Moderating, but still a heavy sea running. Noon, clear. Latitude obs. $13^{\circ} 33' N.$, long. per Chron. $85^{\circ} 35' E.$

SW. and SW
by S.

The 21st. 22nd. and 23rd. p.m. Squally at times, and the sea continued till we approached to within 60 miles of the land. The barometer only fell 4-10ths of an inch during the gale. At Madras they had no wind, but a very heavy surf and torrents of rain. On the 25th we reached Madras, and found every thing smooth. During two days after the gale we put the fires out, and set all the sail we could, but the current was so strong to the eastward that we could make no way. We experienced a strong southerly current after leaving Madras, and we heard they had had a very strong gale off Coringa, but I could not learn in what direction.

No. 2.—*Extract from the Log of the Barque "Isadora," Capt. G. Hodson ; along the Coast from Vizagapatam to Calcutta.*

On the 15th September, at anchor in Vizagapatam Roads. First, and middle parts light SbW. winds and gloomy weather ; latter part strong SSW. winds and clear.

16th. Ditto ditto winds and weather.

17th. Steady, and strong SSW. winds, with showers of rain throughout.

18th. Ditto moderate NW. winds, veering to NNE. and cloudy weather.

19th. Ditto NNW. winds and dark gloomy weather, with rain. Weighed for Bimlipatam.

20th. Ditto NNW. winds and cloudy weather.

21st. Ditto SW., W., and WNW. winds, and hazy weather. Weighed for Calcutta.

G. HODSON.

No. 3.—*Abridgement of the Log of the Brig "Spy," Capt. C. R. Smith, from Rangoon towards Calcutta. Reduced to Civil time.*

On the 18th September.—At noon in lat. $18^{\circ} 40'$. N., longitude $88^{\circ} 48'$. E. Light steady breeze at east, with cloudy weather, continuing till midnight. Steering to the NNW. and NbW. At midnight wind EbN., squally.

19th September.—At 4 A.M. threatening appearance to the NE. Daylight, fresh gale EbN. with a swell from the NE. At 8h. increasing gale; shorten sail at 10h.; sounded in 60 fathoms. Noon *more moderate*; made sail; heavy swell from the NE.; wind EbN. lat $20^{\circ} 36'$ N., longitude $88^{\circ} 01'$ E. P.M. Moderate breeze, but cloudy; swell from the NE., stood to the eastward. At 5 P.M., threatening to the NW. battened down fore hatches. At 6, heavy thunder and lightning, wind NE.; midnight moderate and cloudy, with lightning to the westward. Heavy swell from the NE., vessel pitching heavily.

20th September.—1 A.M. Heavy gusts from NW. In fore topsail; hove too. 6 A.M. wind NNW. more threatening appearance; gale increasing to noon from the NW.; hove too under close reefed main topsail, in 45 fathoms water. No observation. Latitude by account and soundings $20^{\circ} 44'$ N., longitude $88^{\circ} 18'$ E. P.M. Fresh gale, heavy swell from the northward. At 5 P.M. having stood to the westward, no ground 70 fathoms. At 10 set the foresail; swell from the northward; much water tumbling on deck with the roll of the vessel. Midnight moderate gale and cloudy; swell from the NW.

21st September.—4 A.M. High confused sea; less wind; vessel labouring very heavily. At 5, wind from SW. with a heavy sea. At 8, no ground 70 fathoms. At 10, soundings in 55 fath-

oms. Noon, fresh breeze and cloudy. Lat. obs. $20^{\circ} 53' N.$, longitude $88^{\circ} 35' 30'' E.$ P. M. Steady breeze, and heavy swell to the SW. Vessel rolling heavily, and much water washing on board. At midnight the Floating Light NEbN.

On the morning of 22nd got a pilot, and stood in with moderate weather.

Capt. Smith remarks at the close of his log—"I do not call the weather we experienced during these dates a gale; should I have been outward bound, I am pretty sure that the "Spy" would have gone through it with double reefed topsails, reefed courses, close-reefed boom mainsail, and fore topmast staysail. No doubt we should have felt it with this sail, but what I got of it was nothing to speak of, with the exception of a lot of water tumbling in upon our decks, we being deep, and I suppose within the influence of the lateral tides off the Sand Heads at the fall of the freshes, which must have occasioned this. My longitudes, I have reason to know, are perfectly correct."

No. 4.—*H. C. S. "Amherst," Capt. Paterson, at anchor, Kyook Phoo Harbour. Civil time.*

18th September, 1839.—At sunset wind south, squally and heavy rain. 8 A.M. Bar. 30.3; midnight SE. light breezes, cloudy and rain.

19th September.—A.M. Light breezes SE. At 3, a heavy squall. At 4, strong breezes ESE. and heavy rain. At 8 the same; noon SE. squally and rain. At 3 P. M. Bar. 30.2; sunset to midnight strong breezes and squally.

20th September,—A.M. Strong breezes SE., and squally with rain. At 3 a heavy squall from SE. with pouring rain. At 4, the same, Bar. 30.1. At 8 squally with rain. At noon wind south, more moderate. Sunset, ESE. squally and rain. Midnight, SE. squally and incessant rain.

21st September.—A.M. SE. squally, with incessant rain. At 4 the same. At 8 moderate with incessant rain and thunder. Noon, south; moderate incessant rain. Sunset and till midnight cloudy, squally and rain. Bar. 30.

No. 5.—*Captain Elson, Master Attendant of Chittagong, in his report of 27th December, says—*

“On the 19th and 20th September we had a severe gale here, which lasted about 24 hours; that is, the severity of it did, it was not accompanied with rain. The wind principally held between east and south, veering towards the conclusion to the SW. as all gales do on this coast, when they break up.”

No. 6.—*Abridgment of the Log of the Barque “John William Dare,” from Chittagong towards Calcutta. Reduced to Civil time.*

18th September, 1839. Noon, moderate breezes from the SE., clear weather. Lat. $20^{\circ} 36'$ N., long. $90^{\circ} 20'$ E. Bar. 29.50. Ther. 86°. Steering to the SSW. and SW. The wind SE. and light, freshening towards midnight. At $11^{\circ} 30'$ squally and rain.

19th September.—7 A.M. Hauled up to the westward; wind ENE. Noon, strong breezes with passing squalls and showers of rain. A heavy sea from the SW.; ship rolling heavily. Lat. obs. $20^{\circ} 6'$ N., longitude $88^{\circ} 15'$ E. Bar. 29.39. Ther. 86°. P.M. Strong breezes, cloudy weather, and a heavy swell from the WSW. At 5-30 Point Palmiras WbN. distant 12 miles. At 6h. 25 fathoms water. At 8h. heavy thunder and vivid lightning, with a most dismal appearance. The Barometer falling; prepared for bad weather. At 9h. heavy squalls with thunder, lightning, and rain. Midnight, heavy gales; in fore topsail.

20th September.—8 A.M. Increasing gales from NW. Hove too under close reefed main topsail. Noon, Bar. 29.20. Ther. 83.30. Lat. by estimation $20^{\circ} 10'$ N., longitude $88^{\circ} 10'$ E. P.M. Heavy gales from NNW. with showers of rain. 4 P.M. gale abating; Barometer rising fast; made some sail. Midnight, Bar. 29.35.

21st September.—Daylight, moderate and fine. At noon, Bar. 29.45. Ther. 86°.

No. 7.—*Extract from the Log of the Ship “Emerald Isle,” Capt. Saunders.*

For several days previous we experienced constant light, baffling airs, at SW. to East, with hot sultry weather.

September, 19th.—P. M. Lat. in $20^{\circ} 41'$ N., long. by Chro. $89^{\circ} 27'$ E. moderate breezes, veering at NE. to east, with partial

passing showers. Sunset, pleasant breezes and fine weather, with a clear horizon. Midnight, increasing breezes. 2h. 30m. A.M. entered the Eastern Channel with the Floating Light ship bearing W $\frac{1}{2}$ S. ; increasing breezes with light showers, wind as above. Daylight entered the Gasper Channel, wind veering at NE. to ENE. and dark cloudy weather. 8 A.M. pleasant steady breezes at NE. with passing clouds. At noon, fresh breezes and cloudy.

20th.—4 P.M. Squally, with passing showers, sky bearing a threatening appearance to the north and east. At 5h. increasing breezes ; in topgallant sails, and sent royal yards on deck. At 6h. blowing very strong in puffs, with a heavy threatening appearance to the north. At 6-30 clued up and anchored off Kedgeree Lighthouse. At 7h. experienced a very hard squall from NNW. Constant rain and fresh gales from this time up to midnight. 2 A.M. squally, with severe gusts at times ; less rain, and clouds more dispersed ; towards daylight fresh gales and heavy rain. Wind at WNW. or NW. At 8, ditto gales and weather. Noon, less rain, but blowing very strong.

21st.—4 P.M. Sky thickening to the NW. and no appearance of the gale breaking. Sent topgallant yards on deck. Sunset, fresh gales at NW. with heavy rain. At 8 P.M. wind more westerly ; ditto, gales and weather. Midnight, wind at west, and the weather somewhat broken, and beginning to brighten up to the westward. 3 A.M. Blowing strong at west, but every appearance of fine weather. Daylight, pleasant fresh breezes and fine weather. At 8 A.M. wind at WSW. and a clear sky.

No. 8.—*Capt. Bond, Master Attendant at Balasore, in his report to Government, says—*

At Balasore on the 18th September, the Thermometer stood at 87°. Wind SE. with slight sleety rain, light breeze.

19th.—At 86°. Wind NE. cloudy, with a fresh breeze.

20th.—At 83°. Wind NW. flying clouds and slight rain.

21st.—At 84°. Wind NW. ditto ditto very slight rain.

22nd.—At 87°. 30'. Wind SE. clearing up in rain.

N.B.—Barometer broken.

“ I was outside in the Roads in the schooner Orissa on the 19th September, wind NE. with cloudy weather. Ran over to Pipli. Finding the breeze freshen, with every indication of a gale, ran back

during the night to Balasore, having treasure on board ; and anchored under the lee of the Surtah hills. 20th. A.M. wind shifting to the NW. ran for the Chooramun Mud. Cloudy, with a threatening appearance, but finding the wind pretty steady, ran again to the eastward, abreast of Piply. Continual heavy rain, with strong gusts of wind, till 10 P.M. when the wind lulled. Found a Telinga brig ashore at low water off Balasore. On the morning of the 21st. wind SE. and clearing up. Found on my return to Balasore that the want of rain had injured the crops to the westward of Piply, right south to Pooree ; whereas to the eastward of Piply they had abundance of rain, and crops good."

No. 9.—*Ship "Isabella Cooper," at anchor at Kedgeree. Captain Salmon's note to me, says—*

" In answer to your note respecting the weather, the ship Isabella Cooper was laying at anchor at Kedgeree with 60 fathoms of chain out, and royal yards up. From the 18th to 21st September strong breezes with heavy rain, thunder, and lightning ; while blowing fresh, winds from North to NW.

J. SALMON.

Barometrical observations on board the H. C. L. V. "Hope," Capt. Hudson ; at the Inner Station.

18th Sept. Time.	Bar.	Ther.	Remarks and Weather.
8 A. M.	29.70	84	Light airs, clearing up.
Noon,	, 70	87	Calm. Hot.
8 P. M.	, 68	85	Moderate Easterly breeze.
19th Sept. P. M.	29.60	84	Moderate. NE. heavy threatening weather.
Noon,	, 70	86	Ditto, ditto, Cloudy.
4 P. M.	, 50	86	{ Strong NE. breeze ; tremendous swell ; threatening from Eastward.
8 P. M.	, 52	83	{ Unsteady, squally.
Midnight.	, 52	81	{ Frequent gusts at NNE. and unsettled weather.
20th September.			
8 P. M.	29.42	80	{ Blowing hard in heavy gusts. NNW. threatening.
Noon,	, 43	81	Strong NNW. breezes with hard squalls do.
4 P. M.	, 32	81	{ Continued heavy squalls ; constant rain.
8 P. M.	, 46	80	{ <i>Barometer falling!</i>
Midnight.	, 49	81	Apparently clearing up. Bar. rising fast.
Ditto, Weather.			
21st September.			
8 A. M.	29.53	82	Moderating ; frequent squalls from WSW.
Noon,	, 51	84	Fresh WNW. breezes ; gloomy weather.
8 P. M.	, 61	85	Light SW. breezes and cloudy.

Tabular view of the Gale of the 19th to 21st Sept., 1839, as experienced along the River, from the Pilot and Light Vessel stations to Calcutta.

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Having drawn up the reports from the H. C. Pilot and Light Vessels in a tabular form, I have printed them so as to give the best view of the Gale along the course of the river to Calcutta.

Date.	Vessels' Names.	Situation.	Wind, Weather, and Remarks.
18th Sept., 1839.	Saugor, P. V. . .	Eastern Channel and Saugor roads,	First part Light SE. breeze and fine weather, noon ENE. and cloudy to the eastward, latter ENE. light breeze and squally.
	Cauvery, P. V. . .	From Bankshall, to near Kedgeree,	Light breezes and fine weather.
	Jane, P. V. . .	A little below Point Jelly, ..	Wind from SEbS. very light, frequent rain at night.
	Hope, F. L. V.	Inner station, Gasper Buoy WbN. Lower Buoy SSE. Upper Buoy NbW.	On 17th Light Southerly and SSE. breezes, &c. and calms, cloudy to the eastward and lightning to NE. and N. On 18th 5 A.M. light squalls NE. to East, and constant heavy rain and calms and rain, clearing up. Noon, Southerly, calm; hot sultry weather, clouds rising all round. Sunset, light variable breezes S. to E., clouds to NE. a swell on, increasing; 8 P. M. moderate easterly breezes, tremendous heavy swell setting in from southward and eastward with a strong westerly set. Weather assuming an unsettled appearance. 9h. 30m. P. M. passing squalls, wind all round. Midnight moderate NE. breezes, heavy clouds all round; passing rain, lightning to the northward and heavy swell.
	Krishna, P. V. . .	Under weigh in the Eastern Channel, & at anchor 9 fathms., F.L. Buoy E $\frac{1}{2}$ S. F.L. EbS.	First part light airs and calms; middle, pleasant easterly breeze; latter, freshening easterly breezes.
	Beacon, L. V. . .	Outer Station,	On the 17th Light SW. breezes veering to S. and SSE. cloudy and lightning. At midnight of that day to noon on the 18th varying from SSW. round to ESE. and becoming squally; at 8 P. M. increasing breeze from ESE; and at midnight wind veering from NE. to ESE. with rain and unsettled weather.
	Megna, P. V. . .	Near the Floating Light Buoy, ESE.	First part calms; middle, variable from E. to ESE. cloudy and rain; latter, fine weather.

Date Civil time.	Vessels' Names.	Situation.	Wind, Weather, and Remarks.
21st Sept. 1839.	Saugor, P. V.	Reef Buoy NWbW., and latterly Saugor Light East, in 9 fathoms.	First part fresh WSW. to SW. breezes and squally, with rain; noon, moderate WSW. and fine; latter, light SW. breeze and fine weather.
	Cauvery, P. V.	Eastern channel, Floating Light E $\frac{1}{2}$ S. 9 fathoms.	SW. breeze and fine weather.
	Jane, P. V.	Off Bankshall.	First and middle part strong breeze and rain, WNW. to SW.; latter moderating.
	Hope, F. L. V.	Inner station as 18th.	1 A. M. Wind shifted to West, blowing hard at times. Daylight, blowing hard in gusts, with threatening appearances SE. to SW. with lightning &c. weather moderating; heavy squalls WSW.; heavy sea. Noon fresh WNW. breezes with cloudy and gloomy weather; 8 P. M. light SSW. breeze, unsettled appearance all round, lightning to the westward, sea moderating; midnight light SSW. breezes, cloudy, unsettled. At 4 A. M. 22d, fine weather, wind WSW.
	Krishna, P. V.	Under weigh on the Eastern reef, and at anchor upon it, in 7 $\frac{1}{2}$ fathoms, F. L. east.	2 A. M. Wind shifted to WSW., weather moderating; first part fresh WSW. winds and cloudy and hazy weather; middle, moderate westerly breeze and fine; latter, light westerly breezes and fine.
	Beacon, F. L. V.	Outer Station.	4 A. M. Gale continuing, blowing hard from WNW. in heavy squalls of wind and light showers of rain. 4 A. M. Do. of gale broke, with a fresh WSW. breeze and fine; swell continuing; noon, moderate, WSW. and fine weather; 8 P. M. light WSW. to SW. Midnight, light SW. breezes.
	Megna, P. V. ...	Under weigh on the Eastern reef.	First and middle part fresh breezes from W. to SW. and cloudy; latter light airs from S. to SSW. and fine.

At Calcutta.

The following observations on the Gale, as it occurred at Calcutta, are my own, taken in a rather confined situation in Park Street, Chowringhee. The barometrical observations are my own and those of the Surveyor-General's Office, my barometer being corrected to the standard one.

Sept. 19th.—4 P.M. Bar. 29.48. The day mostly calm, hot, and cloudy; towards evening heavy dark *cumuli* and *nimbi* to the eastward, with lightning at times. 9 P.M. Bar. 29.47, wind ENE. dark gloomy weather; drizzling rain, and low moaning breeze throughout the night, with squalls and rain at times.

September 20th.—6 A.M. Wind NE. Bar. 29.44. Dirty drizzling weather, with a sighing undulating wind. 10 A.M. Wind NNE. Bar. 29.45; heavy rain and strong squalls at times. *Noon*, NNE. to NE. Bar. 29.37. Strong squalls and rain, heavy scud flying from the NE. 2 P.M. NNE. Bar. 29.33. Squalls, but almost calm at intervals, with heavy gusts, and rain. 5 P.M. Wind north. Bar. 29.33. Strong gale and heavy rain. 6 P.M. NNW. Heavy squalls and rapid scud from NW. 7 P.M. *Calm!* Bar. 29.34. At 9, wind NNW. Bar. 29.37 P.M. Strong squalls and rain. *Midnight*, NW. with heavy gusts and rain.

September 21st.—5 A.M. SW. Bar. 29.43. Squalls and rain. 9 A.M. SW. Bar. 29.49. Clearing up. 11 A.M. Calm. At noon the gale terminated. Bar. 29.50, drizzling rain and squally from W. and SW.

Throughout this Gale the clouds were always, so to speak, before-hand with the wind below them. When the wind was at NE. the clouds were moving from NNE., and by the time the wind arrived at North, or very little to the west of it, the scud was flying from NNW. or NW., and again from West, or nearly, so while the wind was yet at NW. shewing that the centre of the vortex above (if it was a vortex) was further advanced than its position on the earth.

*Meteorological Observations at the Surveyor General's Office,
Calcutta.*

Thursday, the 19th September, 1839.

Time.	Bar.	Mer.	Air.	Evgp. Sur.	Wind.	Aspect of the Sky.
Inches.						
Sunrise.	29.600	80.5	80.0	79.8	E.	Generally clear.
At 9h. 50m. ..	·630	85.6	87.9	84.9	E.	Cumuli, or stacked clouds.
Apparent noon.	·616	87.9	90.4	84.9	N.E.	Cumuli.
At 2h. 40m. ..	·512	86.4	90.0	85.0	N.	Very cloudy.
At 4 P.M. ..	·480	85.5	88.9	85.0	W.	Cloudy.
Sunset.	·478	84.2	85.8	83.3	E.	To the E. Nimbis, or rain clouds.
Rain. ....	.....	.....	.....	.....	.....	Inches.

N.B.—The rain which fell on the 18th, was noted on the 19th at noon.

20th September, 1839.

Time.	Bar.	Mer.	Air.	Evgp. Sur.	Wind.	Aspect of the Sky.
Inches.						
Sunrise. ...	29.430	79.0	77.0	77.0	NE.	Overcast, rainy, and squally.
At 9h. 50m. ..	·446	80.5	77.9	77.1	N.	Overcast, squally & smart rain.
Apparent noon.	·375	80.0	78.0	77.5	NE.	Drizzly and squally.
At 2h. 40m. ..	·333	80.1	78.0	77.1	N.	Overcast, rain, and squally.
At 4 P.M. ..	·333	79.8	77.6	76.9	N.W.	Blowg. a gale with incessant rain
Sunset.	·339	79.0	77.0	76.6	N.W.	{ Blowing a gale (but rather { moderate.)
Rain. ....	.....	....	....	....	....	Inches 2.62 of the 19ths.

21st September, 1839.

Time.	Bar.	Mer.	Air.	Evgp. Sur.	Wind.	Aspect of the Sky.
Inches.						
Sunrise. ...	29.426	78.5	76.0	76.0	Very High W.	Cloudy.
At 9h. 50m. ..	·491	80.7	81.2	78.5	Ditto	Cloudy.
Apparent noon.	·499	80.7	79.5	77.5	High SW.	Raining.
At 2h. 40m. ..	·490	80.5	79.9	77.0	SW.	Cloudy.
At 4 P.M. ..	·486	80.5	79.5	77.0	SW.	Cloudy.
Sunset.	·496	80.0	78.8	76.5	SW.	Cirro strati, or vein clouds.
Rain. ....	.....	....	....	....	....	Inches 4.32 of the 20ths.

We now arrive at the more inland stations, and as the tempest seems to have travelled from the mouths of the Megna, inland, towards Rungpore, I have, to enable the reader better to trace it, begun at Burrisaul, in lat. $22^{\circ} 35'$, long. $90^{\circ} 22'$, near the spot

where the Megna enters the Bay of Bengal, on its Eastern bank, from which place I have a letter from R. Ince, Esq. Superintendent of Salt Chokies.

From R. Ince, Esq. Burrisaul; Lat. 22° 35' N. Long. 90° 22' E.

19th September, 1839.—At 4h. 40m. p.m. a gale commenced from the SE.; it blew for half an hour, then ceased for an hour, when it began again, and continued all night. During the 20th the wind got more round to the east, and blew with great violence until past midnight, when it settled at south, and gradually cleared up; the wind having veered round to the west on the morning of the 21st. The gale was at its *utmost* between 11 and 12 on the night of the 20th.

Following now, as nearly as possible, the course of the river on both banks, we have successively the following reports, mostly received from the officers of government at the different stations by Mr. Secretary Prinsep, in pursuance of the public notification inserted in my first memoir.

Report from Mr. Assistant Surgeon E. Foakes, dated Comilla, September 28th, 1839.

Latitude 93° 28' N. Longitude 91° 2' E.

On the 19th of September 1839, after a very hot day, thermometer standing at 89°, we were visited about half past four p.m. by a heavy squall of wind, attended with torrents of rain, thunder and lightning, but not very severe. At first it came from the north, but shifted round suddenly to the south, and blew very hard for two hours; the wind then abated, but the rain continued all night, and in showers the following day; the wind was from the south, but not very high; it again rose in the evening and blew very hard from SEbS. occasionally shifting round to the east.

21st.—6 A.M. The wind still continues to blow from the same quarter in squalls, attended with heavy showers of rain.— Still blowing from the same quarter. 6 p.m. The wind began to lull about this time, and gradually died away, blowing lightly from the southward.

From Dr. G. Lamb of Dacca. Lat. 23° 42' N. Long. 90° 17' E.

Register of the Barometer and Wind at Dacca from 18th to 23rd September, 1839.

Sept. 1839.	Barom. at 10 A.M.	Barom. at 3 P.M.	Barom. at 10 P.M.	Ther. attached 10 P.M.	Do.outside. at 10 P.M.	Remarks.
18th.	29.91	29.82	29.83	85	84	Calm, or a gentle breeze from East and SE. Cloudy in all quarters.
19th.	29.84	29.70	29.63	84	82	Forenoon. Calm dense nimbi in the E. and SE. At 7 P.M. a heavy squall from the East for half an hour, followed by rain all night. Gentle breeze from NE. and ENE. Rain measured at 10 P. M. 1.1.
20th.	29.56	29.43	29.48	81 5	80	Wind NE. moderate rain ; heavy clouds. 1 P. M. Heavy rain ; wind gentle from NE. 2 to 4 P.M. Heavy rain, wind in squalls from NE., rain ceased at 5 P.M. Wind increasing from ENE. 6. Hard squalls, no rain ; wind ENE. 10 P. M. Wind EbN. with frequent squalls all night. Rain 2.8.
21st.	29.51	29.56	29.64	81	80	21st 3 A.M. Blowing hard with heavy rain ; wind SE. very heavy squalls till 6 A.M. when the rain ceased ; and the wind abated slightly.
22nd.	29.73	29.69	29.74	81 5	81 5	7 to 9 A.M. Occasional squalls from SSE. 10 to 12 wind SEbS. fresh with squalls and rain. Noon, wind S. fresh with squalls to 4 P.M. Wind SbW. abating. 6 P.M. Wind SbW. moderate ; evening fine. 10 P.M. Wind SE. gentle rain. 2.
23rd.	29.78	29.69	29.73	84	83	22nd Fine weather, wind SE.
						23rd Ditto, Ditto.

Report by Dr. Sullivan, 36th Regt. N. I.; from Jumalpore.
Lat. 24° 58' N., Long. 82° 58' E.

On the night of the 20th instant, this station was visited by a severe storm, which continued throughout the night without abatement, and in a diminished rate for the whole of the next day. The wind set in from the eastward at about 5 p.m. from which point it continued to blow, with but slight deviation to the southward, was accompanied by heavy rain, but no thunder or lightning, and came in frequent and tremendous gusts; it gradually reached its utmost violence at about midnight.

For several days previously, the weather was unusually sultry, with a clear sky, and scarcely a breath of air stirring. Thermometer 86° at noon; from which it suddenly fell to 78° on the day of the storm, and has scarcely exceeded that range since.

Jumalpore stands on the western bank of the Burhampooter river; is pretty clear of heavy tree jungle in its vicinity; the nearest hills are distant about 50 miles, in a nearly due north direction; the prevailing wind is easterly, which blows for nine months in the year.

.....
Report from Jumalpore, by Lieut. C. W. Tripp, 30th Regt. N. I.

September 19th. The weather all day hot, the sun bright, evening close and sultry; at 9 p.m. a few clouds raking over the moon; at 10 they had accumulated, and a breeze springing up from the SE. increased and freshened during the night; rain at 11 p.m. and rain continuing on the early part of the morning of the 20th.—Fresh breezes and cloudy weather, with showers at intervals; the wind sometimes lulling into dead calms until 4 p.m., when the wind commenced to blow strong and steadily from NNW. accompanied with rain, and so continued for some hours. During the night it shifted round to SE. and blew a gale with constant rain; wind veering about between two or three points to either side of SE., and coming on with occasional gusts much harder than others. This continued all day of the 21st, with slight variations, though with some occasional appearances of an abatement. Ther. 78° in the

verandah. At 7 P.M. the storm for a short time appeared to be renewing its energies. At 10 P.M. the wind had got round to nearly due west, and was evidently falling. Rain heavier than at any other period. 22nd. At daybreak nearly a calm.

General Observations.—This storm, as felt here, can be considered as only a moderate one, having injured but a few houses that had roofs, and blown down only such trees as had previously been in nearly a falling condition. No thunder nor lightning at any period of the storm.

Memorandum.—The River Dâk from Assam, due on the 22nd arrived this day, the 24th; from which it is to be presumed the storm higher up the Burhampooter river had caused delay to the boats.

—————
Report by Mr. Deputy Collector Smart, Jungypore.

Lat. 24° 28' N. Long. 88° 13' E.

A severe gale occurred at this place, Friday, 20th September, 1839. 6 A.M. Wind easterly, blowing in irregular gusts, weather very cloudy, occasional drizzling. Noon, not blowing so strong, drizzling. 5 P.M. Wind veered to NE. blowing in strong gusts, drizzling. Midnight, blowing very violently from NNE. accompanied with torrents of rain. Continued blowing from the same point, with unabated fury, till 6 A.M. of the 21st.

Saturday, 21st.—6 A.M. Wind veered to north, violence somewhat abated; still raining very heavily. 10 A.M. Blowing furiously again. Noon, wind somewhat abated, but still raining. 4 P.M. Wind veered to NNW. blowing very strong. 7 P.M. Wind somewhat abated. 10 P.M. Blowing from NW. in subdued gusts, still raining. Midnight, wind dying away.

Sunday, 22nd.—6 A.M. A gentle breeze blowing from the south. There was a total absence of thunder and lightning, and this is a feature remarkable in every regular gale.

—————
The following is an extract from a letter dated Moorshedabad,
Lat. 24° 11' N. Long. 88° 15' E., 24th September, 1839.

“The regiment was detained here for a couple of days, by a very severe storm, which commenced on Thursday night, 19th

Sept. and continued, without intermission, till 9 o'clock, P.M. on Saturday the 21st. It first blew from the SE. then the E. ; shortly after from the NE., when there was a lull for about half an hour, the rain falling absolutely in torrents. It then commenced to blow hard from the north, and towards daybreak on Saturday morning, it veered round to the north-west, and continued so all day, with tremendous gusts of wind and rain every now and then. It is said that several lives have been lost in the city and neighbouring villages, by the falling-in of houses, and I fear we shall hear of much mischief on the river, ere long."—*Hurkaru. 29th September.*

STORM.—We hear that during a storm which took place at Rampore Bauleah on the 21st instant, the whole fleet of boats belonging to the establishment of the Superintendent of Police in the Lower Provinces was completely wrecked,—most of them foundering before the occupants could save the most trifling articles. The fleet consisted of pinnaces, budgerows, and beauleahs. The greatest sufferers are Mr. Smith himself, Messrs. Huttimann, Thompson, Potter, and Hodgson, Dr. Renwick, and the Sherishtadar. The whole party were,—after the storm, in which, happily, no lives were lost—received into the circuit house, and treated by the civil officers with characteristic kindness.—*Englishman. 29th September.*

Report from Wm. Bell, Esq. Officiating Joint-Magistrate of Mal-dah. Lat. 25° 3'. Long. 88° 4'.

On Thursday* afternoon, 20th Sept. it rained heavily, and at about $5\frac{1}{2}$ P.M. began blowing hard from the north, ranging between the north and north-west points ; it continued, attended with heavy rain, the whole night and the next day, increasing until about 3 P.M. of the 21st, and abating gradually till $10\frac{1}{2}$, when both rain and wind ceased.

I am indebted to Dr. Edlin, for his observations of the thermometer, which fell as low as 79° Faht. having stood steadily for several weeks at 84° , 85° , 86° , and only on one or two

* NOTE.—Friday in the MS. which is evidently an error, since Friday is the 21st, mentioned subsequently.

occasions in the last three months, was marked as high as 89° in the shade.

I am sorry to say, neither of us possess a barometer, so that I am not able to offer any remark upon it. The following day was very close and warm ; and a very considerable quantity of rain fell, and great damage was done by the wind.

Dr. Edlin's register of the Thermometer at Maldah.

Sept. 1839.	Before Sunrise	10 A.M.	Noon.	4 P.M.	Evening.	Rain.
18th.	82	85	87	90	85 $\frac{1}{4}$	
19th.	82 $\frac{1}{4}$	86	89	92	87	
20th.	80	80	80	81	78	1.1
21st.	79	80	82 $\frac{1}{2}$	84	80	2.8
22nd.	79	84	85	87	84	2
23rd.	80	84	85	87	83 $\frac{3}{4}$	

Report from Chilakhal, about 12 miles NW. of the station of Rungpore. By C. W. Russell, Esq. Civil Service.

Lat. about 25° 53', Long. 89° 00'.

At daybreak on the 20th instant, the sky became overcast and wild. At 10h. 30m. A.M. a storm commenced from NE. accompanied by rain, and continued, with about the same degree of strength, until 1 A.M. of the 21st, when it lulled ; then recommenced from the same quarter (NE.) increasing in violence until 8. A.M., from which time until 10 A.M. it blew exceedingly hard, with violent gusts at intervals ; the wind during these two hours continually shifting between N. and NE. It now moderated slightly, until 2 P.M. from which hour until 1h. 30m. on the 22nd (when it suddenly ceased) it raged with the greatest violence ; shortly afterwards, the wind went round to SW. and continued in that quarter until 3h. 50m. P.M., when it went back to NE. with every appearance of a recurrence of the storm.

It is difficult to say precisely when the storm was at its greatest height, but I am inclined to think it was between the hours of 8 and 10 A.M. of the 21st, and the last hour of its continuance.

Variations of the Thermometer.

20th	8 A.M.	86	21st	1 A.M.	79	Wind NE.
11	.....	81		6	76
12 Noon.	.....	81		8	75
2 P.M.	80			10	75	
4	.....	80		12 Noon.	76
6	.....	80		2 P.M.	76
8	.....	79		4	76
10	.....	79		6	76
12 Midnight....	79			8	76	
				10	76	

22nd 1h. 30m. 77 NE.

The time the storm ceased.

5	75	SW.
6	.....	76
8	.....	75
12 Noon.	78		
4 P.M.	80		NE.
5	.....	75
5	.....	75

Chilakhal on the South bank of the Teestah, 12 miles NW. of the Civil station of Rungpore.

C. W. RUSSELL.

The storm mentioned in the following report, though it is not connected with ours as a gale of wind, may possibly be so in an electrical point of view, for it will be remarked, that while in general the vessels and stations within the influence of the turning gale, experienced but little thunder and lightning, this storm was, on the contrary, almost a perpetual discharge of it ; as if the electric fluid had been generated by the vortex, conducted along the Himalayan chain, and discharged at Dadoopoore?

To H. T. PRINSE, ESQUIRE, *Secretary to Government.*SIR, *Dadoopoore, September 30th, 1839.*

In compliance with general orders of the 11th current ; I have the honor to forward some particulars regarding a storm which occurred here during the night of the 20th, and morning of the 21st instant. The observations were made by the Canal Overseer stationed at this place, Conductor W. Dawe, whose words I quote, and have merely to add my testimony to their correctness.

The Canal station of Dadoopoor is situated below the junction of the Somlie and Putteallee rivers with the Jumna, on the right bank of the latter; lat. $30^{\circ} 12' N.$ and long. about $77^{\circ} 23' 45'' E.$, about 16 miles from the southern base of the Sub-Himalayas.

Extract from Mr Dawe's Report—

“The evening of the 20th was clear, with a light easterly wind, “the fore part of the night; moon light, without a cloud. About “11h. 30m. p.m. distant lightning was perceptible in the NW. “quarter, and about midnight, thunder was heard in the same “direction. At 1h. 30m. a.m. of the 21st, the storm came on in “sudden gusts, accompanied by a continual roll of thunder “and vivid streams of lightning and rain, driven along with great “force, nearly parallel to the earth. The latter only continued “for about half an hour,* but the storm did not totally subside “till about 3 a.m., when it fell a dead calm, and towards “daylight the sky was quite clear, with light airs from the “eastward. The direction the storm took was from the NW. “to the SE. This storm appears to have been more extensively “felt, than those which generally occur in this neighbourhood. “By reports which I have received, it appears the same ravages “have been extended as far down as Kurnaul, and upwards “from this to the foot of the lower Hills, (as I have personally “observed). There appears to have been no abatement in the “force of the storm, for I witnessed in my route yesterday “(to the Canal head) trees of immense size torn up by the “roots.”

I append an extract from the Meteorological Register kept here, from the 18th to the 24th instant, inclusive.

I have directed the attention of the Overseers employed under my orders at Kurnaul, Hansi, and Delhi, and two intermediate stations, to the registry of storms, and on the occurrence of such phenomena I will do myself the honor to forward a combined report of their observations.

I have the honor to be, &c.

W. E. BAKER, *Lieut. Engineers.*

Superintendent Delhi Canal.

* The quantity of rain which fell during this storm was 0.91 inch.

Extract from the Meteorological Register kept at Dadoopoor for September, 1839.

1840.]

the Theory of the Law of Storms in India.

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Days of the month.	Observations day-break.						Observations 10 p. m.						Observations at 4 p. m.						Observations at 10 p. m.					
	Barometer.			Attached Ther.			Barometer.			Attached Ther.			Barometer.			Attached Ther.			Barometer.			Attached Ther.		
	Attached	Detached	Ther.	Attached	Detached	Ther.	Attached	Detached	Ther.	Attached	Detached	Ther.	Attached	Detached	Ther.	Attached	Detached	Ther.	Attached	Detached	Ther.	Attached	Detached	Ther.
18	28.652	77.0	76.0	76.0	0.0		28.718	87.0	86.0	82.0	28.640	92.0	90.0	84.0	0.0	28.676	79.0	78.0	77.0	0.0				
19	28.702	74.0	73.0	73.0	0.0		28.802	72.0	71.0	71.0	28.714	81.50	81.0	77.0	0.67	28.720	74.0	73.0	73.0	0.0				
20	28.706	70.50	70.0	69.0	0.0		28.754	78.0	78.0	75.0	28.636	88.0	86.0	80.0	0.0	28.672	79.0	78.0	78.0	0.0				
21	28.632	70.0	69.0	68.0	0.91		28.686	82.0	81.0	75.0	28.622	89.0	88.0	81.0	0.0	28.622	76.0	75.0	74.0	0.0				
22	28.622	71.0	70.0	70.0	0.0		28.702	83.50	83.0	78.0	28.662	90.0	89.0	81.0	0.0	28.660	77.0	76.0	76.0	0.0				
23	28.702	71.0	70.0	71.0	0.0		28.765	83.0	83.0	82.0	28.718	91.0	90.0	81.0	0.0	28.718	77.0	76.0	77.0	0.0				
24	28.730	72.0	71.0	72.0	0.0		28.816	84.0	84.0	84.0	28.732	90.0	89.0	79.0	0.0	28.732	79.0	79.0	76.0	0.0				

(True Extract)

(Signed) W. E. BAKER, LIEUT.

Superintendent *Delhi Canal.*

(True Copies) H. T. PRINSEP.

Secretary to the Government of India.

(Signed) W. DAWE, CONDUCTOR,

Delhi Canal Department.

Dadoopoor, 29th September, 1839.

The following tables will show, as nearly as can be collected from the preceding documents, the state of the wind and weather at noon over the whole extent which they embrace, and from it the course of the gale upon the chart has been deduced.

Tabular view of the Gale between 18th and 21st September 1839, at Noon.

Date, Civil time.	Names of Vessels & Places.	Winds and Weather.	Lat. N.	Lon. E.	Bar.	Ther.	Remarks.
Noon, 18th Sept. 1839.	H. C. Str. Enterprise,	SW. Fresh gale veering to the Westward by 19th,	° 13 22	° 84 50			Gale increasing, and sea rising.
	Bark Isadora,	NW. moderate, veering to NNE.	17 40	83 28			Cloudy weather at Vizigapatam.
	Brig Spy,	Steady breeze, East and cloudy,	18 40	88 48			
	H. C. S. Amherst,	Southerly breeze,	19 26	93 34	30.3		{ At anchor in Kyouk Phyoo, Harbour.
	John William Dare,	Moderate from SE. clear weather	20 36	90 20	29.50	86	{ Standing to the SSW. and SW. from Chittagong to Calcutta.
	Emerald Isle,	Light winds SW. to East,					No Log for this day.
	At Balasore,	SE. wind. Slight rain,	21 28			87	At anchor Outer Station.
	Beacon Light Vessel,	ESE. squally	21 04		{ 27		At anchor Inner Station.
	Hope Light Vessel,	Southerly. calms hot and sultry,	21 26		{ 07	87	{ Eastern Channel and Saugor roads.
	Saugor, P. V.,	ENE.,					Ditto ditto.
	Krishna, P. V.,	Pleasant Easterly breezes,					At anchor near the Inner Station.
	Megna, P. V.,	Variable from ESE. cloudy and rain,					At anchor below Point Jelly.
	Jane, P. V.,	Very light SEbE. breezes,					Cloudy to the Eastward.
	At Calcutta,	No report for the 18th, wind NE.			29.61	0	
	Burrisaul,	No report for the 18th,	22 35	90 22			
	Commillah,	No report of wind and weather for the 18th.	23 28	91 02		87	Cloudy all round.
	Dacca,	Calm or gentle breeze from East or South,	23 42	90 17	29.86		
	Jungypore,	No report,	24 28	88 13			
	Jumalpore,	No report,	24 58	89 58			

Date Civil time.	Names of Vessels and Places.	Winds and Weather.	Lat. N.	Lon. E.	Bar.	Simp.	Ther.	Remarks.
Noon, 19th Sept. 1839.	H. C. Steamer Enterprise, ..	Heavy gale, SW.	13 18	85 10				§ High topping sea, § squalls and rain.
	Bark Isadora,	Moderate NNW. winds and gloomy weather,	17 40	83 28				Left Vizigapatam roads.
	Brig Spy,	EbN. gale but more moderate than before,	20 36	88 01				§ Threatening to the NE. § but moderating at noon.
	H. C. S. Amherst,	SE. squally and rain,	19 26	93 34				§ At anchor in Kyook Phyoo harbour.
	John William Dare,	ENE. strong breezes and passing squalls,	20 06	88 15	29.39			86 A heavy sea from the SW. In the Gasper Channel.
	Emerald Isle,	NE. fresh breezes and cloudy, ..						86
	At Balasore,	NE. fresh breezes and cloudy, ..						
	Kedgeree, Beacon, L. V.	Strong, increasing ESE. breezes, cloudy and rain.	21 04	88 27				§ Heavy swell from the eastwd., htg. weather.
	Hope, L. V.	Moderate NE. threatening wea- ther,	21 26	88 07	29.70			86 Threatening to E. and S.E. heavy swell.
	Saugor, P. V.	Moderate NNE. breeze and fine,						Kedgeree roads.
	Krishna P. V.	Moderate gale from NE.,						Eastern Channel.
	Megna, P. V.	Light breezes E. to ESE. and squally,						At anchor near the F.L.
	Jane, P. V.	Light winds from SSE.,						Off Point Jelly.
	Cauvery, P. V.	Moderate northerly breezes & cldy.						Kedgeree Roads.
	At CALCUTTA,	Hot sultry calms, NE. airs,	22 34	88 22				Threatening to the Eastd.
	Burrisaul,		22 35	90 22				§ Gale commenced at 4 p. m. from SE.
	Commillah,	Hot sultry weather,	23 28	91 02				89 Heavy squall at half past 4 p. m.
	Dacca,	Hot sultry and calms,	23 42	90 17	29.77			Threatening to the East, squalls at 7 p. m.
	Jumalpore,	Hot clear weather,	24 53	89 58				Breeze from SE. 10 p. m.

Date, Civil time.	Names of Vessels and Places.	Winds and Weather.	Lat. N.	Lon. E.	Bar.	Simp.	Ther.	Remarks.
20th Sept. 1839.	H. C. Steamer Enterprise, Bark Isadora,...	SWbS. decrsg. gale fine & clear, NNW. cloudy weather, ...	13 33 17 50	85 35 83 35				Gale had terminated by noon. At Bimilapatam.
	Brig Spy, ...	Gale from NW. and threatening,	20 44	88 18				{ Hove too under close reefed main topsail in 45 fms. wtr.
	H. C. S. Amherst, ...	South, rainy and squally, ...	19 26	93 34				{ Squalls from SE. veering to S. at noon. In Kyouk Phyoo Harbour.
	John William Dare, ...	Heavy gales NNW. with rain, ...	20 10	88 10	29.23		85	{ Hove too under close reefed main topsail.
	Emerald Isle, ...	Blowing strong WNW. to NW.,						At anchor off Kedgeree.
	At Balasore, ...	NW. flying clouds and rain, ...						Strong gusts at times from NW.
	Beacon, Light Vessel, ...	Gale about NW. heavy squalls,	21 04	88 27			83	Varying NNW. to WNW.
	Hope, Light Vessel, ...	NNW. Strong breezes with hard squalls, ...	21 26	88 07	29.43		80	{ Confused sea & threat. ap- pearance, increasg. to a gale
	Saugor, P. V. ...	Hard squalls N. to NW. and rain						At anchor Eastern Channel.
	Krishna, P. V. ...	NW. blowing moderate gale heavy squalls and rain, ...						At anchor near Floating Light.
	Megna, ...	Hard breezes N. to NNW. with heavy rain at intervals, ...						Ditto ditto ditto.
	Jane, P. V. ...	NNW. Strong breezes sq. & rain,						
	Cauvery, P. V. ...	Strong northerly breezes and rain,						At anchor.
	At Calcutta, ...	NNE to NE. Strong sq. & rain,	22 34	88 22				Between Kedgeree & the F.L.
	Burrisaul, ...	Blowg. with violence (about ENE.)	22 35	90 22				
	Commillah, ...	Moderate gale about south, ...	23 28	91 02				
	Dacca, ...	NE. moderate and rain.	23 42	90 17				
	Jungypore, ...	Easterly in irregular gusts, ...						
	Morshedabad, ...							
	Malda, ...	Raining; wind not noticed, ...	25 03	88 04				Gale from about NNW at 5½ PM
	Jumalpore ...	Fresh gale from E. to SE., ...	24 58	89 58				Reports not very distinct.
	Rungpore Chilakhal, ...	NE. gale with rain,	25 46	88 44				Gale began at 10h. 30m. A.M.

Date,	Names of Vessels and Places,	Winds and Weather.	Lat. N.	Lat. E.	Bar.	Simp.	Ther.	Remarks.	Civil time.
21st Sept.	H. C. Steamer Enterprise, ..	About WSW, squally at times,	14 27	0 0	0	0	0		
	Bark Isadora,	Westerly winds and hazy weather,	17 50	83 56	83 56	83 56	83 56	At Bimilaparam.	
	H. C. S. Amherst,	Fresh breeze (SW.?) cloudy,	19 26	88 35	88 35	88 35	88 35	Heavy swell from SW.	
	John Williamson Dacre,	Moderate and fine weather,	19 26	93 34	93 34	93 34	93 34		
	Emerald Isle,	WSW. clear sky,						At anchor, Kedgeree.	84
	At Balasore,	Wind SE. slight rain,							
	Hope Light Vessel,	Fresh WNW. breeze and gloomy weather,	21 04	88 27	88 27	88 27	88 27		
	Saugor, P. V.,	Moderate WSW. and fine,	21 26	88 07	88 07	88 07	88 07	Near the Head Buoy.	
	Krishna, P. V.,	Moderate WSW. and breezy and weathy,							
	Megna, P. V.,	Fresh breezes West to WSW,						On the Eastern reef.	
	Jame, P. V.,	About West moderate,						Due to ditto ditto.	
	Cauvery, P. V.,	SW. breezes and moderate,						Off Banksall.	
	At Calcutta,	Squally from West and SW. dry,						Eastern Channel.	
	Burrisau,	About West moderate,	22 34	88 22	88 22	88 22	88 22		
	Commillah,	S. Freshly rain, thunder and high- hings,	22 35	90 22	90 22	90 22	90 22		
	Acca,	South, fresh with squalls,	23 28	88 13	88 13	88 13	88 13		
	Jungypore,	North, rain,	24 28	88 04	88 04	88 04	88 04	to NWW.	
	Malda,	About (NNW?) with rain,	24 58	89 58	89 58	89 58	89 58		
	Jumalpore,	At 11. 38m. on 22nd a hill and wind shifting	25 03	90 04	90 04	90 04	90 04	to SW.	
	Rungpore Chilakhal,	At 11. 38m. on 22nd a hill and wind shifting	25 52	87 00	87 00	87 00	87 00		

I have only been able to find for this Gale a good centre on the 20th September, when, as will be seen, it was blowing in a tolerably well defined circle, the centre falling close to Chittagong, where, as we learn, several native craft perished, whether on that day or not I am not certain, but suppose it most probable. The centre, if it had one on the 21st, was not far from Chilakhal, but it seems to have been a gale which had not sufficient strength to form itself into a regular vortex for more than one day, and was interrupted by other causes producing the irregularities, which will be seen by any person who will take the trouble to examine the table with the chart.* One of the most probable obstacles may have been the range of the Kasiya hills, which skirt the eastern bank of the Burhampooter.

Some account of a Journey from Kurrachee to Hinglaj, in the Lus territory, descriptive of the intermediate country, and of the port of Soumeanee. By Captain HART, 2nd Grenadiers; (Bombay Army.)

[Communicated from the Political Department, Government of India.]

Under the impression that any information regarding this part of the country may prove acceptable, I forward the accompanying remarks made during my late excursion to the celebrated temple of Hinglaj, which I am not aware of any European having before visited. A rough sketch of my route is annexed.

On the 24th January I left Kurrachee in company with Route from Kurrachee to Soumeanee. 50 miles. a party of Hindoo pilgrims, and crossing the Hub river reached Soumeanee in three marches. The route as far as the Hub lies over the high ground between the range of hills in which the hot springs, Pier Munga, are situated and the sea. Owing to a heavy fall of rain a few days previous to my departure, a large body of water was running in the river, but on my return, I found only a small stream, which I

* The Chart will appear with Part II. in the approaching number of the Journal.